Electronic Submission

Office of the Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Pocatello, Idaho
October 20, 2007

Comments filing in matter of:	**NOTICE OF PROPOSED RULEMAKING** **NOTICE OF INQUIRY AND ORDER**
Reference:	**ET Docket No: 06-135**
Release date:	**JULY 18, 2006**

Dear Sir/Madam,

On October 30, 2006 and November 29, 2006 AMI Semiconductor (AMIS) filed comments regarding the notice of proposed rule making (FCC 06-135) which is to add two 1MHz wide "wing" bands (also referred to as MEDS) to the current Medical Implantable Communication Service band (MICS), operating from 402 MHz to 405 MHz. AMIS hereby wishes to further comment on specific medical applications its customers are seeking to deploy, and how they may fit within the proposed rule making.

AMIS is a leading supplier of digital signal processing technology for implanted, semi-implanted and body worn hearing aid devices. A recent clinical research summit[1] showed additional evidence that hearing correction through the use of hearing aids stands to be greatly improved for patients wearing two hearing aids (left and right) if these aids are capable of communicating with each other, hence exchange audio information and synchronization data. Most major hearing aid manufacturers today agree that wireless technology used in hearing aids will bring their products to the next step and consequently further help improve their patient's quality of life.

Furthermore, Implanted Acoustics[2] and the House Ear Institute[3] both filed comments supporting the Alfred Mann Foundation's request for additional wide band spectrum of up to 20MHz to accommodate new wireless micro-stimulator devices that restore sensation, in applications such as advanced hearing among others.

While AMIS fully supports Implanted Acoustics, the House of Ear Institute and the Alfred Mann Foundation in their quest for new radio spectrum, AMIS has demonstrated that some of the hearing improvements achieved by interconnecting two hearing aids wirelessly are already possible by using the spectrum available in the current MICS bands today, hence 300kHz channels.

[1] Clinical Research Summit: Facing the Future for Hearing Health care, held in Napa Valley, CA January 19-20, 2007
[2] See Implanted Acoustics reply-to comments filed under docket 06-135 & RM11271, filed on November 28, 2006
[3] See House of Ear reply-to comments under docket 06-135 & RM11271, filed on January 23, 2007

Wireless connection to hearing aids can take two different aspects:

- Ear to ear: where the left and right hearing aid exchange audio and synchronisation data.
- Peripheral device to hearing aid(s): were a programming device, a remote control or a remote audio source wirelessly communicates with the hearing aid(s).

In both cases, the wireless spectrum needed to accommodate the functionalities of such hearing aids is that of implant, body worn and around the body devices, again very much like deployed in MICS today.

Hearing aids are also subject to similar constraints as implants and body worn devices, whereby their ultra miniature from-factor severely limits the power source (battery) available to supply energy, hence very limited radio ERP can be derived when speaking in radio frequency terms. The broadcasting range to cover, the data throughput and the required duty cycle to achieve wireless functionality in hearing aids are those specified in MICS today, hence 300kHz channel bandwidth, 25µW ERP and a duty cycle of up to 100%, pending LBT (Listen Before Transmit) and AFA (Adaptive Frequency Agility) be observed.

AMIS is mindful that the MICS band, as regulated today, is reserved for implantable devices and their associated peripheral equipment, and that they predominately serve life critical applications. As such, and because a hearing aid application with wireless interconnectivity can be a high duty cycle application, AMIS hereby proposes that they be allowed to operate in one of the two newly proposed MEDS band only: the upper wing band, hence from 405MHz to 406MHz. AMIS reiterates its suggestion that this band be partitioned into three 300kHz wide channels, as per its earlier filed comments[4].

AMIS also proposes that the maximum allowed ERP in the wing bands be 25µW with an allowed duty cycle of up to 100%, if LBT is observed, as already allowed in these wing bands under European regulations. [5]

In its past comments AMIS determined that the proposed output power level of 250nW in the wing bands, for devices that do not have LBT capability, is too low and should be the same as allowed in the current MICS band instead, hence 25µW, as also proposed by the European regulatory body [6]. Today AMIS is still convinced that 25µW is needed for the LPLDC (Low Power Low Duty Cycle) devices to comfortably operate in the wing bands. AMIS also believes that operating under the conditions stated above, wireless hearing aid transmissions will be able to nicely co-exist with the LPLDC devices in the new bands. Possible interferences will be handled through protocol (LBT) and the ERP limitation will naturally translate into minimal co-location issues.

AMIS did investigate other spectrum possibilities in the sub-1GHz ISM bands, where the propagation properties in around body tissues would be favourable as well, but the typical spectrum encumbrance would result in much more complex radio circuits, translating into unacceptable current draw, to guarantee a robust and secure link. In addition AMIS notes that the MICS band, as proposed under this new rule making, if accepted, will be in harmony with the recently endorsed MEDS band in European and other countries complying with the ETSI regulations. As such patients benefiting from this technology will be able to travel overseas without any regulatory inconvenience.

[4] See comments filed by AMIS under docket 06-135 on October 30, 2006, page 2, sections 3 and 4
[5] See CEPT/ERC/REC 70-03, Annex 12 bands a1 and a2
[6] See reply-to comments filed by AMIS under docket 06-135 on November 29, 2006

To summarize, AMIS hereby makes the claim that hearing aid devices, whether fully implantable, semi-implantable or body worn are very much part of the category of medical devices the MICS band, and now the newly proposed MEDS band are allocated for. Furthermore, observing the proposed operating characteristics described herein, wireless hearing aids have their place within the MEDS band and can operate without inconveniencing others. They will be no more disruptive than other medical transmissions operating in the MICS (or future MEDS) bands. They use the same characteristics and past history has shown that these characteristics (maximum allowed ERP, initialisation protocols, channel width and, where applicable, allowed duty cycle) have proven secure. Thus operating wireless hearing aids in MEDS should be allowed.

Sincerely,

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